LEPTARTHRUS VITRIPENNIS (MEIGEN) (DIPTERA: ASILIDAE), A ROBBER FLY NEW TO BRITAIN

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The common of Riddlesdown lies on the southern flank of a ridge of the North Downs, some twenty kilometres south of London. Here the outer tentacles of the metropolis stretch from Purley along a dry valley to Caterham. The valley is almost wholly built-up at this point where busy roads and railways pass through the suburbs of Kenley and Whyteleafe, but, high on the common above, the bustle of the valley is hidden by the brow of the hill, and at night the only lights are those of glow-worms in the grass reflecting the stars above. The illusion of countryside is enhanced by the view across to Kenley Common and neighbouring woods on the opposite side of the valley.

The common, with its favourable situation facing slightly west of south, was once a famous entomological site and many field meetings were held here, in particular to see the insects of juniper (e.g. Wakely, 1958). Following the abandonment of grazing, the growth of scrub and trees gradually suppressed the juniper and its decline was carefully monitored by Dr Lena Ward (Ward & Lakhani, 1977). As the number of juniper bushes declined, the special insects were lost. At present about five bushes remain in tiny clearings surrounded by tall trees.

Both Kenley Common and much of Riddlesdown were purchased by the City of London in the late nineteenth century and have been managed by its Corporation as public open space ever since. For many years the grassland on top of Riddlesdown was maintained by mowing, while the steep slopes, inaccessible to machinery, were abandoned to the developing woodland. However, in recent years the introduction of conservation grazing in six small paddocks, which can be closed temporarily while animals are present, has allowed many of the special flowers and insects of chalk downland to survive. It was in one of these paddocks on Riddlesdown, on 1 July 1996, that the insect forming the subject of this piece was beaten from a small birch tree. Diptera normally fly off rapidly from the beating tray, but the weather was unseasonably cool on this occasion, thus allowing the fly to be captured.

Early in the previous year, I had my first encounter with a fly with the most remarkably structured hind legs. The basal segment of its hind tarsus was enormously elongate, as long as the tibia, and flattened in the vertical plane. This proved to be a male of the robber fly *Leptarthrus brevirostris* (Meigen) and over the next two seasons I made a collection of about half-a-dozen specimens from these two commons, all from the downland slopes that are grazed outside the flowering season when insects are most active. When checking and labelling these specimens, one female stood out as being different from the others in several respects, as follows:

a) The second basal cell of the wings terminated in a point from which two veins arose, forming a cross; on the other specimens, this cell was blunt-ended, with two longitudinal veins arising separately from its end.

b) The front of the dorsal surface of the thorax (mesonotum) had short yellow hairs instead of long ones, which were white in the other females but blackish in the males.

c) The basal segment of all the tarsi was red rather than black, and the red colour on the tibiae was also more extensive.

d) The ovipositor was broader.

The aberrant specimen was accordingly submitted to Dr C. M. Drake for his opinion, but, before he could look at it, the chance purchase of a foreign work on asilids (Séguy, 1927) enabled its immediate identification as the only other species of the genus occurring in Europe, *Leptarthrus vitripennis* (Meigen). This identification was duly confirmed by Dr Drake. This discovery was announced provisionally at the Dipterists' Meeting of November, 1996, and participants were requested to check their collections of *Leptarthrus*. This led to two further British specimens of *vitripennis* being found.

The series of *brevirostris* in The Natural History Museum, London, contained about 180 specimens from Britain, and among these was a single *vitripennis*. This was taken by O. W. Richards on 20 June 1948 from chalk grassland at Box Hill in Surrey. The specimen carries the labels 'O. W. RICHARDS COLL 1967–510' and '59364'. However, this latter reference to Richards' collecting diaries yielded no further information (A. E. Stubbs, pers. comm.). My time at the museum was unfortunately limited, but a brief glance at the series of *brevirostris* from continental Europe showed that this also was a mixed series, apparently containing several *vitripennis* from Alpine regions. Sorting these out would be a worth-while exercise, since *vitripennis* was not represented under its own name.

The BENHS collection contained only *brevirostris*, as did most private collections that were searched, but yet another female specimen of *vitripennis* was discovered by Mr A. J. Halstead in his collection. This was found on a knapweed flower on 14 August 1988 at the White Downs site of special scientific interest, near Westcott, Surrey. This is another chalk grassland site, lying on the scarp face of the North Downs.

Examination of further specimens from collections has shown that some of the characters observed on my initial specimen are not valid for separating the two species (J. H. Cole, pers. comm.). The second basal cell is pointed, or almost so, on some male specimens of *brevirostris*, and so quite probably on some females as well. The hairs on the front of the mesonotum are dirty yellowish to gingery brown on other female specimens, so the white hairs on mine are probably due to bleaching. The difference in the width of the ovipositor may only be an apparent difference, since it will vary according to the amount of extension.

The remaining characters, being the short hairs at the front of the thorax and the red colour of the basal tarsal segments, give a valid separation. These characters are used in the recent key to the Asilidae of Switzerland and neighbouring countries (Weinberg & Bächli, 1995). Further differences between the species are given by these authors (and also by Séguy). The face of *brevirostris* is convex, black and shiny, while that of *vitripennis* is flat and covered by dust. Other differences apply only to males. The hind legs of male *vitripennis* are normal, lacking the compressed and extended basitarsus of *brevirostris*. The white triangles of dust in the hind corners of the tergites are absent in male *brevirostris*, which also has slightly darkened wing-tips and a black moustache, contrasting with the whitish-coloured one of male *vitripennis*.

It would appear that *vitripennis* is the rarer species of the two throughout its European range. Although Séguy gives its distribution as "all Europe", he quotes no records (but several for *brevirostris*), thus implying that it was not known from France at that time; it has apparently been found there since then, as France is listed in the Palaearctic Catalogue (Lehr, 1988). While *brevirostris* occurs in all three provinces of former Czechoslovakia, *vitripennis* is only listed for Slovakia (Chvála, 1997). Weinberg & Bächli give *brevirostris* as widespread and relatively frequent in Switzerland, while listing only four localities for *vitripennis* as well as the neighbouring countries of Austria and Germany. The Palaearctic Catalogue also

lists Greece, Poland, Rumania, Sweden and part of the former Soviet Union. There are no records for *vitripennis* from Belgium or the Netherlands, but our experience of overlooking it for at least fifty years suggests that entomologists in these countries should keep a look out for it.

While about 300 specimens of *brevirostris* have been checked and confirmed as this species, there are now three records of *vitripennis* from Britain, spanning a period of 50 years, and none have been reported in the season since dipterists were alerted to its presence here. This might suggest that *vitripennis* is a casual migrant, were it not that all three specimens came from similar habitat and all from the North Downs in Surrey, just 22 km apart. It seems more likely that the new species is an overlooked native of considerable rarity. In south-east England, *brevirostris* is also restricted to chalk grassland (Stubbs, 1970), but the difference in leg structure of the males implies that there is a difference in the biology of the two species, at least in their courtship habits. My specimen of *vitripennis* was taken towards the end of the season of *brevirostris*, as observed in the same year at the same locality. Taken with the dates of the other two specimens, this suggests that *vitripennis* might have a slightly later season, although overlapping that of *brevirostris*. This can, however, be no more than a working hypothesis at present.

My specimen from Riddlesdown has been presented to the BENHS and will be available for inspection at the Society's rooms at Dinton Pastures whenever they are open. The specimen was shown at the 1996 Exhibition of the Society, and photographed for the Exhibition Report (*Br. J. Ent. Nat. Hist.* **10**: Plate I facing p 145)

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